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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/722,088	11/25/2000	Paul Lapstun	NPS028US	4151

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EXAMINER	
JORGENSEN, LELAND R	
ART UNIT	**PAPER NUMBER**
2675	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

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Office Action Summary	Application No. 09/722,088	Applicant(s) LAPSTUN ET AL.
	Examiner Leland R. Jorgensen	Art Unit 2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 02 July 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1 - 30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1 - 30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1 and 26 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al., USPN 5,051,736.

Claim 1

Bennett teaches a sensing device for generating orientation data when positioned or moved relative to a surface. The orientation data is indicative of an orientation of the sensing device [positional input device or stylus 10] relative to the surface [passive tablet 1]. The sensing device generates orientation data. Bennett, col. 5, lines 22 – 23, figure 1. The surface has coded data disposed upon the surface. The coded data has a plurality of substantially undifferentiated marks [small dots] positioned relative to a set of predetermined nominal marking positions [larger dots] and is indicative, when sensed by the sensing device, of the orientation. Bennett, col. 9, lines 57 – 62; and figure 6.

Bennett shows the stylus having a housing. Bennett, figure 2. A orientation sensor is configured to generate the orientation data using the coded data. Bennett, col. 5, lines 22 – 33; and figures 1 and 2. A communicator [communications link 11 or cable 7] is configured to communicate the orientation data to a computer system. Bennett, col. 5, lines 22 – 33; and figure 1.

Claim 1 adds that the orientation data is indicative of at least one of a pitch and a roll of the housing relative to the surface. The specification describes the pitch as the x axis rotation and the roll as the y axis rotation. Specification, page 83, ¶ 8.2.1 and figure 61. Although Bennett does not specifically use the terminology pitch or row, Bennett teaches that the orientation data is indicative of the x-y position. Bennett, col. 5, lines 5 - 10. Specifically, Bennett teaches,

> It is also possible to determine the tilt angle of the stylus (a potentially useful piece of information in some applications) by analyzing the perspective distortion of the TAC shape. More important, using this angle and knowledge of the indices of refraction of the tablet materials, the offset from parallax can be corrected. Note that this does not address the problem of user perceived parallax, only the parallax seen by the stylus optical imaging system. The user's parallax will be a function of the total thickness of the tablet, and the distance to the underlying display, if such is being used. The tablet thickness can be made to be essentially negligible (a few thousandths of an inch) with respect to this problem.

Bennett, col. 11 line 59 – col. 12, line 4. It would have been obvious to one of ordinary skill in the art at the time of the invention develop the pitch and the row from the tilt angle of the stylus.

Claim 26

Bennett teaches a plurality of tags indicative of an identity of a region within which the tag lies, and of a reference point of the region. The region is associated with the surface. The reference point is indicative of the position of the tag within the region. Bennett, col. 5, lines 5 – 20; col. 9, line 53 – col. 10, line 3; and figures 1 and 6. Bennett teaches TACs or Tablet Address Cells as optically detectable patterns on a surface representing binary codes that indicate an X-Y position. Bennett, col. 5, lines 7 – 10.

Claim 27

Bennett teaches that each tag the plurality of tags is indicative of an identity of a region within which the tag lies and includes at least one periodic element of the coded data. Bennett, col. 10, lines 6 – 33, figure 6 and 7.

Claim 28

Bennett teaches that an orientation sensor can be configured to infer the orientation from prospective distortion of at least some of the coded data. Bennett notes, "It is also possible to determine the tilt angle of the stylus (a potentially useful piece of information in some applications) by analyzing the perspective distortion of the TAC [Tablet Address Cells] shape." Bennett, col. 11, lines 59 – 62.

Claim 29

Bennett teaches a sensing device for generating orientation data when positioned or moved relative to a surface. The orientation data is indicative of an orientation of the sensing device [positional input device or stylus 10] relative to the surface [passive tablet 1]. Bennett teaches that the orientation data is indicative of the x-y position. Bennett, col. 5, lines 5 - 10. The sensing device generates orientation data. Bennett, col. 5, lines 22 – 23, figure 1. The surface has coded data disposed upon the surface. The coded data has a plurality of substantially undifferentiated marks [small dots] positioned relative to a set of predetermined nominal marking positions [larger dots] and is indicative, when sensed by the sensing device, of the orientation. Bennett, col. 9, lines 57 – 62; and figure 6.

Bennett shows the stylus having a housing. Bennett, figure 2. A orientation sensor is configured to generate the orientation data using the coded data. Bennett, col. 5, lines 22 – 33;

and figures 1 and 2. A communicator [communications link 11 or cable 7] is configured to communicate the orientation data to a computer system. Bennett, col. 5, lines 22 – 33; and figure 1.

Claim 30

Bennett teaches that the orientation data is indicative of three dimensions of the orientation of the sensing device, specifically the x-y position, Bennett, col. 5, lines 5 – 10, and the tilt angle, Bennett, col. 11, lines 59 - 62.

3. Claims 2 – 10, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett in view of Joyce, USPN 4,814,553.

Claim 2

The specification describes the yaw as the z axis rotation. Specification, page 83, ¶ 8.2.1 and figure 61. Bennett teaches compensation for rotational orientation, that is yaw. Bennett, col. 3, lines 28 – 31; and col. 5, lines 40 – 44.

Bennett, however, doe not specifically teach that the orientation data includes the yaw.

Although Joyce does not specifically use the terminology yaw, pitch, or row, Joyce teaches that the orientation data is indicative of the x-y plane. Joyce, col. 7, lines 10 – 13; and figure 4. This is yaw. See Amendment A, page 10.

Joyce teaches the orientation data as indicative of an orientation of the sensing device 10 relative to the surface. The sensing device generates orientation data. Joyce, col. 2, lines 35 – 59; col. 4, lines 41 – col. 5, lines 17; col. 5, lines 29 - 48. The surface has coded data disposed upon the surface. The coded data has a plurality of substantially undifferentiated marks

positioned relative to a set of predetermined nominal marking positions and is indicative, when sensed by the sensing device, of the orientation. Joyce, col. 2, lines 35 – 59; col. 3, lines 47 – col. 4, lines 13. A orientation sensor generates the orientation data using at least some of the coded data. Joyce, col. 2, lines 35 – 59; col. 3, lines 47 – col. 4, lines 13.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orientation data including yaw as taught by Joyce with the sensing device as taught by Bennett. Joyce invites such combination by teaching,

> The mouse of the present invention relates to the second, or absolute position, category of mouse or other controllers. Such mice offer the substantial advantage of being able to ascertain the position of the mouse on a given surface, not merely in the relative sense, but in the absolute sense of being able to resolve the actual surface coordinates thereof. Consequently, such a mouse may be placed on a surface and its absolute position determined without an a priori knowledge of where the mouse has been.
>
> It will be appreciated that the present invention may advantageously be applied to the determination of absolute positions of other, non-computer related apparatus. In its simplest form, the absolute position of the mouse or control unit along a unidimensional linear or curvilinear path can be determined. For example, the height of a milling head above a work table can be accurately and absolutely determined by placing the mouse on the head adjacent the corresponding encoded pattern located along a fixed vertical member of the milling machine.

Joyce, col. 1, line 64 – col. 2, line 16. Joyce then adds,

> The present invention, in contrast, utilizes one or more solid-state photosensitive arrays, or similar, optical arrays in conjunction with a uniquely patterned, but inexpensively manufactured, surface to effect absolute position orientation. The surface is preferably transparent permitting it to be advantageously overlaid on a chart or other graphic and includes a rectilinear pattern of irregularly spaced lines reflective to infrared light. Alternatively, an irregular checkerboard (tiled) surface may be utilized where adjacent areas are defined by differing indices of reflectivity. As the mouse is moved over the surface (the mouse may, alternatively, be held stationary and the surface moved in relation thereto), the photosensitive arrays thereof detect and output signals representative of the relative orientation between the arrays and the pattern of lines.

> The irregular surface line pattern establishes an identity between mouse output signals and mouse position vectors whereby any particular output signal uniquely corresponds to a single mouse position vector on the surface. A microprocessor or similar computing device is preferably utilized to convert these output signals into meaningful mouse position data. This data may include the angular orientation of the mouse as well as its position with respect to the surface.

Joyce, col. 1, lines 48 – 63.

Claim 3

Joyce teaches that the sensing device has a motion sensor as is typical on any mouse. The transmitter is configured to transmit the movement data to the computer system. Joyce, col. 1, lines 11 – 16.

Claim 4

Joyce teaches that the coded data includes region identity data indicative of an identity of a region of the surface and wherein the sensing device further includes region identity sensor configured to sense the region identity data and wherein the transmitter is configured to transmit the region identity data to the computer system. Joyce, col. 2, lines 35 – 59.

Claim 5

Joyce teaches that the motion sensor is configured to generate the movement data using at least some of the coded data. Joyce, col. 2, lines 35 – 59.

Claim 6

Joyce teaches a plurality of reference points of the region. Joyce, col. 5, lines 40 – 48. Joyce teaches motion sensor is configured to generate the movement data on the basis of the sensing device's movement relative to at least one of the reference points. Joyce, col. 2, line 35 – 59.

Claim 7

Assuming that periodic elements means coded data that is spaced and repeated on a regular or periodic basis on the surface, Joyce teaches periodic elements with the motion sensor configured to generate movement data on the basis of the sensing device's movement relative to at least one of the periodic elements. Joyce, col. 2, lines 35 – 59; col. 3, lines 47 – 62; and figures 3, 5, and 6.

Claim 8

Joyce teaches that the motion sensor is configured to sample the position of the sensing device relative to the at least one reference point or periodic element to generate the movement data. Joyce, col. 2, lines 35 – 59; col. 5, lines 18 – 48.

Claim 9

Joyce teaches a estimator. Joyce, col. 5, line 49 – col. 6, line 2.

Claim 10

Joyce teaches a communicator configured to communicate the distance data to a computer system. Joyce, col. 4, lines 47 – 51.

Claim 24

Joyce teaches that the coding data is printed with infrared ink, which is substantially invisible to the unaided human eye. Joyce, col. 2, lines 39 – 42; col. 3, lines 52 – 56.

Claim 25

Joyce teaches that the coding data is printed with infrared ink. Joyce, col. 2, lines 39 – 42; col. 3, lines 52 – 56.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett in view of Joyce as applied to claim 2 above and further in view of Blesser, USPN 4,577,057.

Claim 11

Joyce teaches a distance estimator. Joyce, col. 5, line 49 – col. 6, line 2.

Neither Joyce nor Bennett specifically teach that the motion sensing means is configured to use the distance estimated by the distance estimator to resolve a more accurate position of the sensing device than indicated by the at least one reference point or periodic element alone.

Blesser teaches that the motion sensing means is configured to use the distance estimated by the distance estimator to resolve a more accurate position of the sensing device on the surface than indicated by a location-indicating tag alone. Blesser, col. 2, lines 27 – 29, 33 – 35; col. 5, lines 50 – 64.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the distance estimator as taught by Blesser with the sensing device as taught by Bennett and Joyce. Blesser teaches the use of systems similar to Joyce.

> Digitizing tablet systems are well known in the art and are used in a variety of applications. These systems generally include a tablet, a stylus and some instrumentality for producing some form of interaction between the stylus and the tablet from which is derived digital data signals representing the position of the stylus on the tablet.

Blesser, col. 1, lines 11 – 17. Blesser teaches the drawbacks of these prior systems and teaches an improvement.

> When the stylus is held in the hand of the user it is generally not held at right angles to the tablet but rather at some acute angle thereto. Furthermore, in the course of writing on the tablet the angle will very often change. In systems in which the element in the stylus which interacts with the element in the tablet is located at the exact tip of the stylus and directly contacts an element in the tablet, the angle in which the stylus is held relative to the tablet will generally not be a

> factor. However, if the element is not at the tip of the stylus an error, called stylus tilt error, will occur if the stylus is not exactly perpendicular to the working surface of the tablet. This will happen because the position signal produced by the location of the conductive element in the stylus relative to the grid of conductive elements in the tablet will not correspond the position where the tip of the stylus is actually in contact with the tablet. Furthermore, if the angle of tilt changes as a line or character is drawn, which is very often the case, the size of the tilt error from point to point over the line or character will change.

Blesser, col. 1, lines 41 – 60. Blesser teaches, "It is yet still another object of this invention to provide a new and improved technique for determining the position of a stylus on a work surface." Blesser, col. 2, lines 33 – 35. Blesser teaches that its invention can be applied to all types of digitizing surfaces.

> It is to be understood that the invention is applicable to any type of digitizing table system in which positional data is obtained by the interaction of some type of element in a stylus, located at some finite distance from the tip of the stylus, with an array or grid of elements in the tablet. The interaction may be realized, for example, by capacitive, inductive or acoustic coupling. The coupling signal may either be emitted from the stylus or from the tablet and the elements in the tablet may either be arranged in a rectangular (Cartesian) or polar coordinate configuration. The stylus may be a pen type or pencil type or the like or even a stylus that does not have a writing (i.e. recording) element.

Blesser, col. 3, lines 45 – 57.

5. Claims 14 – 17 and 19 - 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett in view of Masaki et al, USPN 5,159,321.

Claim 14

Bennett does not teach an acceleration sensor.

Masaki teaches an acceleration sensor. Masaki, col. 6, line 61 – col. 7, line 1.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the acceleration sensor of Masaki with the position sensing device of Bennett. This

would allow the position sensing device to "enter figures, letters, numerals, etc. into a computer to which the input device is connected, in the exact pattern followed by the input device." Masaki, col. 1, lines 38 – 45. See also Masaki, col. 7, lines 16 – 29.

Claim 15

Masaki teaches that the acceleration sensor is configured to sense at least two substantially orthogonal components of acceleration. Masaki, col. 6, line 61 – col. 7, line 1.

Claim 16

Masaki teaches a timer configured to generate a time reference as the sensing device is moved relative to the surface region. Masaki, col. 5, line 32 – 45; col. 6, lines 17 – 20.

Claim 17

Masaki teaches that the transmitter is configured to transmit time reference data to the computer system. The time reference data is indicative of the time reference of the movement data as generated by the timer. Masaki, col. 5, line 32 – 45; col. 6, lines 17 – 20; and figure 10.

Claim 19

Masaki teaches a force sensor configured to sense a force applied to the surface by the sensing device. Masaki, col. 3, lines 13 – 47.

Claim 20

Masaki teaches that the transmitter is configured to transmit force data to the computer system. The force data is indicative of the force. Masaki, col. 1, lines 38 – 45; col. 3, lines 54 – 60.

Claim 21

Masaki teaches a stroke detector configured to detect, by way of force, when the sensing device is applied to the surface and removed from the surface, thereby to identify the duration of the stroke. Masaki, col. 6, line 9 – col. 7, line 1.

Claim 22

Masaki teaches a marking nib 9. Masaki, col. 2, lines 44 – 57, figure 3.

Claim 23

Masaki teaches that the sensing device is in the form of a pen. Masaki, col. 2, lines 38 – 57, figures 1 and 2.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett in view of Giobbi et al, USPN 5,469,193.

Claim 18

Bennett does not teach a wireless transmitter.

Giobbi teaches a cordless pointing apparatus for computer input wherein the transmitter is a wireless transmitter. Giobbi, col. 1, lines 51 – 63.

It would have been obvious to one of ordinary skill in the art at the time of the invention for one to combine the cordless pointing apparatus of Giobbi with the position sensing device of Bennett to provide a cordless position sensing device. Giobbi invites such combination arguing, "no physical connection is required between the pointer 36 and the receiver 32…" Giobbi, col. 4, lines 13 – 14. Giobbi also states, "This system can be used as the basis of a computer input pointing device, such as a conventional pen or mouse, or in many other situations where the

exact positioning and/or movement information of an object is required." Giobbi, col. 4, lines 14 – 18.

Response to Arguments

7. Applicant's arguments with respect to claims 1 – 28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703-305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, telephone number (703) 306-0377.

lrj
July 16, 2003

STEVEN SARAS
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